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ABSTRACT

In an effort to conceptualize, plan, and conduct research activities to gather data for decision making concerning program improvement in vocational agriculture, a model for evaluating programs was developed by the Department of Agricultural and Extension Education, University of Florida. Through use of this model, six objectives to guide research activities were identified. These objectives relate to social and leadership skill development; employer satisfaction; cost-effectiveness; occupational skill development; participant satisfaction; and occupational status, job placement, and career patterns. Using these objectives and the model, several research studies have been conducted and data analyzed and reported. Based on these studies, some conclusions were made relative to the program of vocational agriculture in Florida: (1) student mastery of the competencies was approximately 57 percent; (2) students who were members of Future Farmers of America (FFA) or who had supervised occupational experiences tended to perform better on achievement tests; (3) the majority of program completers were involved in an agriculture-related occupation one year after graduation; (4) program completers did not accurately state their postsecondary plans; (5) program completers had very positive attitudes about their experiences in vocational agriculture; and (6) highest FFA degree earned significantly contributed to the explanation of variance in program completer attitudes about the values of the program. The conclusions of these studies will be used to provide a more programmatic, systematic, and valid data base for decisions affecting the future of vocational education in agriculture. (KC)

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TOWARD A PROGRAMMATIC RESEARCH SCHEME FOR PRODUCT EVALUATION OF VOCATIONAL EDUCATION IN AGRICULTURE

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INTRODUCTION

Evaluation of vocational education programs is of major concern to today's vocational educators, legislators, citizenry and others concerned with quality education. A review of the Vocational Education Amendments of 1976 (American Vocational Journal, 1976) makes it clear that Congress expected evaluations of vocational education programs to yield data and information useful in formulating ongoing and future policy decisions. The Carl D. Perkins Vocational Education Act of 1984 requires that states not only produce annual reports to identify progress made toward achieving stated objectives but also use the reports for a diagnostic tool in planning and improving programs (Hayes, McQuat, & Wilder, 1985). In a recent report of a Florida commission (Governor's Commission on Secondary Schools, 1983), it was pointed out that sufficient data regarding the effectiveness of vocational education are not available in Florida thus lending support for the need to provide such data.

In a report, Vocational Education in Florida, 1976, Today and Tomorrow (Florida Department of Education, 1976), limited evaluative data are provided regarding the effectiveness of Florida vocational education programs in agriculture. Florida was one of ten Southern states which participated in a study (Iverson & Brown, 1979) regarding the role of high school vocational education in agriculture and the occupational success of graduates. Researchers administered a questionnaire to a 10% systematic, stratified sample of 1974 graduates of high school

vocational education in agriculture programs. Findings from the 1,252 respondents indicated that experiences in vocational education in agriculture were valuable relative to their occupational success.

Other evaluative studies related to vocational education in agriculture have been conducted in various states such as those by Berkey (1969, 1974), Cvancara (1977), and Neavill (1974) which were designed to assess the occupational status, success and/or achievement of current and former students. Although the findings and conclusions from these and other similar studies provide some insight for making decisions about agricultural programs, they lack "local" relevance to Florida. Florida's agriculture and thus its vocational education in agriculture programs are somewhat unique and diverse in terms of program offerings, locales, and facilities. Because of this diversity, more comprehensive studies applying rigorous research methodologies are needed to provide state, county, and local agencies with information regarding the effectiveness of vocational education in agriculture programs in Florida. Purcel (1979) indicated the need for more sophisticated and longitudinal methods of evaluating vocational education has increased.

MODEL FOR GUIDING RESEARCH

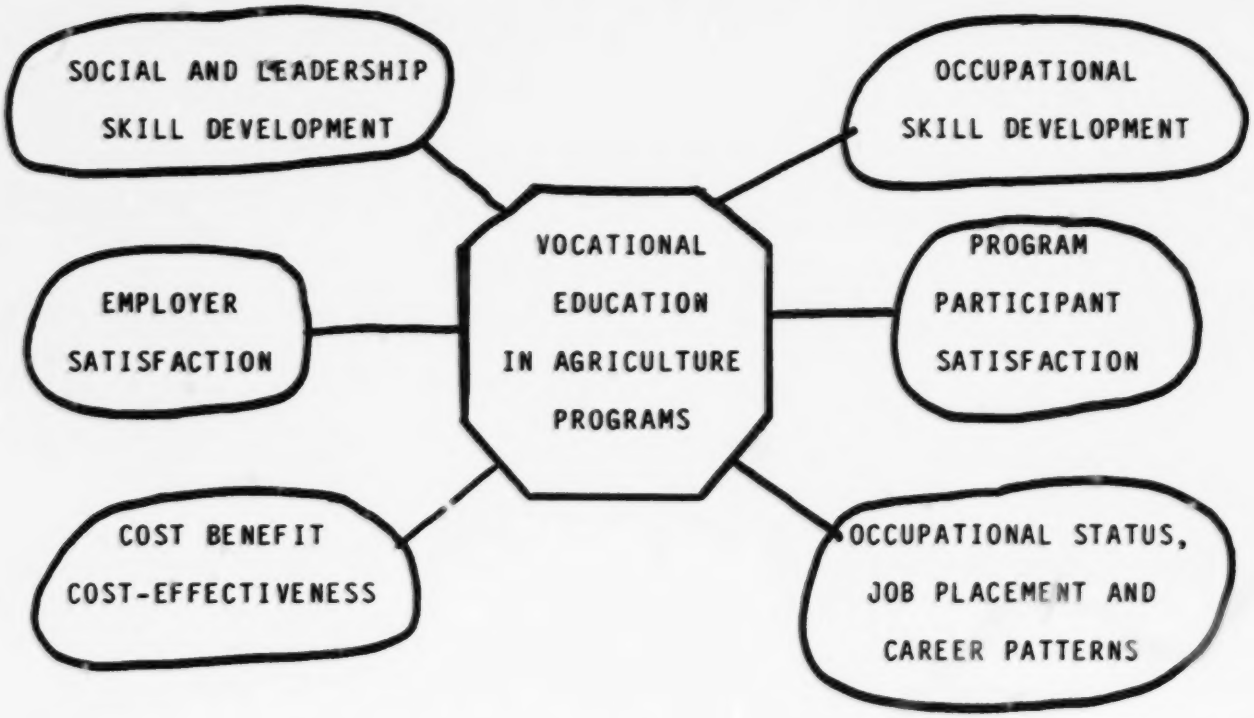
Because of the lack of valid, available evaluative data for program decision-making in vocational agricultural education, the Department of Agricultural and Extension Education, University of Florida developed a conceptual model as a basis for gathering

more valid product evaluation data on a longitudinal basis. Also, research studies with an overall programmatic focus were deemed to be appropriate. Newcomb (1978) lamented that "...agricultural education continues to lack the kind of programmatic research necessary for in-depth understandings essential to an emerging discipline" (p. 51). Miller and Warmbrod (1983) stated that "research in agricultural education...(is) often lacking a programmatic emphasis" (p. 262). Other individuals (Krebs, 1976; Taylor, 1976; Brown, 1979; Copa, 1980) noted that a programmatic research thrust in agricultural education could be advantageous.

The development of the product evaluation model and ultimately the research planned, completed, or in process was/is an effort to provide a more programmatic emphasis to research conducted in Florida relative to vocational education in agriculture. The model was designed to provide a more logical and sound theoretical basis for identification of significant problems for investigation, and for greater potential impact of results in Florida.

The product evaluation model for assessing agribusiness and natural resources education in Florida consists of the six major component areas shown in Figure 1. Research studies have and will be designed to gather data in each area.

Figure 1. MODEL FOR GUIDING PRODUCT EVALUATION RESEARCH FOR VOCATIONAL EDUCATION IN AGRICULTURE PROGRAMS


SOCIAL AND LEADERSHIP SKILL DEVELOPMENT
OCCUPATIONAL SKILL DEVELOPMENT
VOCATIONAL EDUCATION IN AGRICULTURE PROGRAMS
EMPLOYER SATISFACTION
PROGRAM PARTICIPANT SATISFACTION
COST BENEFIT COST-EFFECTIVENESS
OCCUPATIONAL STATUS, JOB PLACEMENT AND CAREER PATTERNS

RESEARCH OBJECTIVES RELATED TO MODEL

The central purpose of research related to these six areas is to evaluate and improve programs of vocational education in agriculture in Florida. The specific objectives were:

1. To determine the extent to which program completers possess the competencies specified in the objectives of the program which they completed.

2. To appraise former program participants' satisfaction with the competencies developed as a result of participating in the program and identify student, school, and program variables related to former program participant satisfaction and success.

3. To determine the ability of program participants to enter and progress in occupations for which they have received training.

4. To appraise employer satisfaction with the competencies of former program participants.

5. To determine psychological/sociological characteristics of program participants.

6. To determine the societal, personal, and economic benefits and costs of the programs.

MODEL RELATED RESEARCH

Occupational Skill Development Studies

Major questions being asked by persons, institutions, or agencies evaluating program success are "What have the students learned?" and "What skills do they possess?". In order to gather empirical evidence to assist in answering these questions, several research activities have been completed which deal with the occupational skill development component of the evaluation model (See Figure 1).

Development of Assessment Instruments

Studies (McGhee & Cheek, 1983; Cheek & McGhee, 1983a; 1983b; 1983c; 1983d; 1983e; 1983f) were conducted to develop and field test written criterion-referenced test items for two courses in the Florida secondary vocational education in agricultural program. These two courses (Fundamentals of Agribusiness and Natural Resources Education, 9th grade, and Applied Principles of Agribusiness and Natural Resources Education, 10th grade) are designed to prepare students for more advanced and occupationally specific programs. The test items were based upon the competencies identified in the state curriculum guide (Panhandle Area Educational Cooperative and Florida Department of Education, 1980a; 1980b) for each of these courses. Items were reviewed and

revised by teachers, teacher educators, supervisors, and College of Agriculture faculty members. The test items were field tested by administering them to groups of students who had completed the Fundamentals and/or Applied Principles courses. As a result of these two projects, tests of specific competencies and item banks of test questions were developed and published.

Five other similar competency-based test development studies (McCall & Farrington, 1981; McCall & Farrington, 1982; McCall, 1982; Maday, 1983; Maday, 1984) have also been conducted. These studies all had a primary objective to develop and field test written and performance tests for specific agricultural occupations. Occupations for which test development activities were completed include tractor mechanics, nursery grower, greenhouse grower, cattle rancher, and agricultural machinery and equipment operator and maintenance person. All tests were developed based upon the Occupational Proficiency Performance Standards (OPPS) developed for the various occupational areas by the Florida Department of Education.

Student Assessment Studies

Based upon the test item development projects relating to the Fundamentals and Applied Principles courses, two research studies (McGhee & Cheek, 1984; Cheek & McGhee, 1984) were designed to assess the competency level of students enrolled in these two courses during the 1982-83 school year. Each of these studies had four primary objectives:

1. Determine level of mastery on either the Fundamentals of Agribusiness Occupations Achievement Test (FAOAT) or the Applied Principles Achievement Test (APAT);

2. Compare students' level of mastery on either the FAOAT or APAT, according to selected demographic variables;

3. Determine which recommended competencies for each course are in fact being taught; and

4. Determine the percentage of time devoted to the various content areas in the instructional program.

The population for the first (Fundamentals) study was schools in which the Fundamentals programs were offered. Data were collected from 2,011 students and 54 teachers in 50 secondary schools. Teachers surveyed were those who agreed to participate in the study. The fact that volunteers were used in this study obviously limits the external validity of this study but under the circumstances, it was felt this strategy was appropriate. A 60-item objective test was developed. The test covered competencies identified in the Curriculum Guide for Fundamentals of Agricultural Occupations (Panhandle Area Education Cooperative and Florida Department of Education, 1980a) in each of the six major content areas of the Fundamentals program. These content areas include agribusiness management, animal science, plant science, soil science, agricultural mechanics, and leadership. The number of questions on the test related to these content areas was proportional to the recommended percentage of time that should be allocated to instruction in each content area.

Test questions were selected from those for each major content area in the item banks discussed previously (McGhee & Cheek, 1983). The mean item difficulty and discrimination values for the test were .60 and .55, respectively. An estimate of the

reliability of each component of the test was determined by calculating a Kuder-Richardson 20 correlation coefficient which resulted in the following: animal science, .94; agricultural mechanics, .95; leadership, .58; plant science, .86; agribusiness management, .65; and soil science, .79.

In addition to the 60 test items designed to assess performance in Fundamentals, five additional items sought information concerning the students' grade in school, related vocational student organization membership, previous enrollment in agricultural classes, supervised occupational experience (SOE) program involvement, and career plans.

A teacher questionnaire was developed to determine the percentage of time spent on topics related to the six major Fundamentals content areas. Part II of the questionnaire asked the teacher to indicate if each of the 76 competencies identified in the Curriculum Guide for Fundamentals of Agricultural Occupations (Panhandle Area Educational Cooperative and Florida Department of Education, 1980b) was included in their program.

Data from this study revealed that the mean score of the 2,011 students administered the 60-item FAOAT was 34.23 or 57.05%. The standard deviation was 9.79 which indicated that approximately two-thirds (68%) of the students' mean raw scores were between 24.4 and 44.0. The raw scores ranged from 3 to 60. Student mastery was highest in the areas of agribusiness management (68.1%) and plant science (62.3%), and lowest in agricultural mechanics (50.6%). The study also found that students taking the FAOAT who were currently members of the

related vocational student organization (FFA) had significantly (t-10.38, $p < .0001$) higher scores than students who were not in FFA, as did students who had SOE programs. In addition, college bound students, students with plans to enter agricultural occupations or the military, or those who had no plans were found by ANOVA ($F=20.6$, $p < .05$) and Duncan's multiple-range post-hoc analysis to have scored higher than students who planned to enter nonagricultural career fields.

Of the 76 Fundamental competencies recommended in the Fundamentals curriculum guide (Panhandle Area Educational Cooperative and Florida Department of Education, 1980) 69.7% were taught by 50% or more of the teacher respondents. All of the competencies in the leadership content area were taught by 75% or more of the teachers, (See Table 1) whereas only two of the 16 (12.5%) competencies in the agricultural mechanics content area were taught by 75% or more of the teachers.

Table 1
Percentage of Competencies by Content Area Identified by More Than 75 % of Teachers as Being Included in Fundamentals Program

n = 54

Content Area	Total Number of Competencies	# of Competencies Identified by 75%	Percent
Animal Science	19	7	36.8
Aricultural Mechanics	16	2	12.5
Leadership	5	5	100.0
Plant Science	18	10	55.5
Agribusiness Management	7	4	57.1
Soil Science	9	6	66.7

In a second study related to the assessment of competencies possessed by students in the Applied Principles program, results were based upon data from 44 teachers who indicated they would be willing to administer the test to 1,039 students. As previously cited using volunteers limits the generalizability of this study.

The Applied Principles program includes three instructional components, each designed to utilize one-third of the school year. All students complete the common core component: agricultural business management, agricultural mechanics and leadership/citizenship development; then, instructors select two specialized components from the following taxonomies: agricultural mechanics; agricultural production; agricultural resources; forestry; and ornamental horticulture. Therefore six component tests of 20 questions each were constructed and administered in various combinations depending upon the instructional areas taught.

Data presented in Table 2 illustrate that students had the highest mean scores on the core component, 12.35 (61.75%), followed by agricultural production, 11.14 (55.7%); agricultural resources, 10.06 (50.30%); ornamental horticulture, 8.81 (44.05%); agricultural mechanics, 8.25 (41.25%); and forestry, 8.11 (40.55%). Students performed best on the leadership and citizenship portion of the test and poorest on agricultural mechanics. To determine how students performed on the APAT, regardless of component, a total test score was derived. The mean total raw score was 31.37 (52.28%) with a standard deviation of 10.81, which indicates that two-thirds of the students had a mean score somewhere between 20.56 (34.27%) and 42.18 (70.03%).

Table 2
Achievement of Students on the APAT

Component	Mean Score	Number of Questions	S.D.	N	Percentage Score
Core	12.35	20	4.08	1038	61.75
Ag Business Management	4.27	7	1.61	1038	61.00
Ag Mechanics	3.92	7	1.83	1038	56.00
Leadership & Citizenship	4.17	6	1.71	1038	69.50
Ag Production	11.14	20	4.10	823	55.70
Ornamental Hort	8.81	20	4.43	633	44.05
Ag Mechanics	8.25	20	3.22	380	41.25
Forestry	8.11	20	3.21	190	40.55
Ag Resources	10.06	20	3.36	34	50.30
TOTAL TEST	31.37	60	10.81	1039	52.28

Students scoring significantly higher ($t=3.93, 3.50$; $p<.0005$) on the APAT were members of the vocational student organization (FFA) and were involved with SOE programs. Also, higher scorers tended to plan to continue with post-secondary education, enter the military, or enter an agricultural occupation as revealed by ANOVA ($F=6.99$, $p < .0001$) and Duncan's multiple-range test.

Data were examined to determine the degree to which the competencies identified in the state curriculum guide were being taught by 75% or more of the teachers. Data in Table 3 reveal 75% to 100% of the teachers taught 48.2% of the core competencies, 35.3% of the agricultural mechanics competencies, 75% of the ornamental horticulture competencies, 52.4% of the forestry competencies, 25% of the agricultural production competencies and 58.3% of the agricultural resources competencies. A common core subcomponent of leadership had the highest proportion (78.3%) of competencies being taught by 75% or more of the teachers.

Table 3
Percentage of Competencies by Instructional Component Identified by 75% or More of Teachers as Being Included in the Applied Principles Program

Component	Total Number of Competencies	Number of Competencies Identified by 75% or More Teachers	Percent
Core	54	26	48.2
Ag Business Mgmt	14	2	14.3
Ag Mechanics	17	6	35.3
Leadership	23	18	78.3
Ag Mechanics	17	6	35.3
Ornamental Horticulture	12	9	75.0
Forestry	21	11	52.4
Ag Production	24	6	25.0
Ag Resources	12	7	58.3

Program Participant Satisfaction and Occupational Status Studies

Two studies (Arrington & Price, 1983; Arrington, 1984) have been conducted related to the degree to which current and past program participants were satisfied with the competencies developed in and through the vocational education in agriculture program. These studies gathered data twice from members of the same population: (1) while they were high school seniors (Phase I), and (2) one year after completing a vocational education in agriculture program (Phase 2). In the 1983 study (Phase I), Arrington and Price sought to:

1. Describe selected demographic characteristics of senior vocational agriculture students in Florida high schools.
2. Appraise participant satisfaction with the competencies developed as a result of participating in the vocational agriculture program,
3. Identify student, school, and program variables related to program participant satisfaction.

In the second study (Phase II) (Arrington, 1984) the objectives were to:

1. Determine the status (one year after graduation) of 1983 program completers of Florida vocational agriculture programs with regard to occupation, further education, economic level, and other pertinent demographic factors.

2. Compare the current occupational status of 1983 program completers with their pre-graduation occupational plans.

3. Appraise program completer attitudes about experiences in vocational agriculture and compare attitudes with their pre-graduation opinion of vocational agriculture.

4. Determine if program completer attitudes about the value of vocational agriculture are related to their current occupational status, economic level, further education, and demographic factors.

From the population of all Florida high school seniors enrolled during 1982-83, an accessible population of 1,848 students was identified. For Phase I, a random sample of 385 students was selected and data collected from 312 individuals (82%) via telephone interviews. A second random sample of 300 students was selected for Phase II.

To obtain requisite information for Phase I, a telephone interview questionnaire was developed, checked for content validity, and field tested with senior vocational agriculture students which yielded a reliability coefficient of .87 for the attitude scale.

To gather data for Phase II, a mail questionnaire was developed, field tested, and found to have a Cronbach's alpha reliability coefficient of .90. Data were gathered from 209 (69%) of the sample of 300. A sample of nonrespondents was followed up and it was determined that no differences existed between respondents and non-respondents.

The findings of these two phases are best discussed together to review the similarities and/or changes. One of the first important comparisons of this two-phased study is to compare current occupational status with students' post graduation plans. Phase I revealed only 2.6% of the seniors planned to be involved in farming (see Table 4). However, 22% of the program completers indicated they were farming on a full-time or part-time basis. There were 105 (42.6%) students employed in an agricultural occupation other than farming. Data summarized in Table 4 also illustrate that over 45% of the students indicated they planned to attend college or some other post-secondary school after graduation. However, one year after graduation, only 28.9% were attending school on a full-time or part-time basis.

Table 4
Comparison of Plans After Graduation with Actual Occupational Status

Occupational Categories	Pre-graduation Plans N=310 Number	Pre-graduation Plans N=310 Percent	Actual Status N=204 Number	Actual Status N=204 Percent[1]
Farm	8	2.6	17	8.3
Farm (part-time)	*	*	28	13.7
Agricultural Occupation	35	11.3	105	42.6
Non-Agricultural Occupation	30	9.7	74	36.3
Post-Secondary Vocational Education	24	7.7	16	7.8
College	117	37.7	43	21.1
Military	42	13.5	11	5.4
Don't Know	54	17.5	*	*
Unemployed	*	*	18	8.8

[1]Percentages add up to more than 100 percent due to multiple responses.
(*) Not asked.

A second comparison was noted in relation to attitudes of students before (Phase I) and after (Phase II) graduation. To measure attitudes, each person reacted to 16 statements related to their vocational agriculture experiences. A four-point Likert scale was utilized to categorize responses.

Table 5
Ratings of Statements About the Vocational Agriculture Program by Students Before and After Graduation

Statements About Their Vocational Agriculture Experiences	Percentages of Responses				
	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean Response
Taught me skills useful in production agriculture	34.00 50.70	65.40 47.30	0.30 1.50	0.30 0.50	3.33 (B) 3.48 (A)
Taught me skills useful in agribusiness & natural resources	24.80 38.50	68.60 51.20	6.40 8.30	0.30 2.00	3.18 (B) 3.26 (A)
Helped me learn how to participate in meetings	38.50 54.60	54.80 36.70	5.80 6.80	1.00 1.20	3.30 (B) 3.44 (A)
Helped me choose an occupation	21.00 22.60	52.40 36.90	25.90 34.90	0.60 5.40	2.94 (B) 2.77 (A)
Helped me develop leadership skills	38.10 48.00	54.50 44.50	7.10 6.00	0.30 1.50	3.31 (B) 3.39 (A)
Helped me understand how to enter & advance in agricultural occupations	29.70 31.03	63.90 52.70	5.80 13.30	0.60 2.90	3.22 (B) 3.12 (A)
Helped me to see the need to get along with others on job	43.40 47.80	53.40 43.90	3.20 5.40	0.00 2.90	3.40 (B) 3.37 (A)

Table 5 (Continued)
Ratings of Statements About the Vocational Agriculture Program by Students Before and After Graduation

Statements About Their Vocational Agriculture Experiences	Percentages of Responses				
	Strongly Agree	Agree	Disagree	Strongly Agree	Mean Response
Helped me learn to work in the production agriculture areas: farming, nursery operations, or greenhouse production	47.10	51.00	1.90	0.00	3.45 (B)
	53.66	41.95	3.90	0.49	3.49 (A)
Helped me learn to work in agribusiness and natural resource areas like sales and services, forestry, or food processing	17.90	62.80	17.90	1.20	2.97 (B)
	30.88	46.57	20.59	1.96	3.06 (A)
Helped me learn to get along with other people	36.60	61.10	2.30	0.03	3.34 (B)
	44.12	50.00	4.41	1.47	3.37 (A)
Vocational agriculture classes were good for me	46.50	51.90	1.30	0.30	3.44 (B)
	68.45	30.58	0.49	0.49	3.67 (A)
If I had to do it over I would re-enroll in vocational agriculture	53.50	43.30	2.90	0.30	3.50 (B)
	77.30	19.32	2.90	0.48	3.73 (A)

(B) = Before 1983; (A) = After 1984
* Coded as SA = 4, A = 3, D = 2, and SD = 1.

In general, experiences in vocational agriculture received very high ratings from the program completers. For the statement, "vocational agriculture taught me skills useful in production agriculture," 98.9% of the students either agreed or strongly

agreed. In comparison, 99.4% of the students either agreed or strongly agreed before graduation. When asked, "Would you enroll in vocational agriculture if you had it to do over again?," 96.6% of the students responded positively after graduation with 96.8% responding positively before graduation. However, it should be noted that while slightly more than half (53.5%) of the students had strongly agreed with the statement before graduation, over three-fourths (77.3%) strongly agreed after graduation.

Another attitude shift occurred on the statement "helped me learn how to participate in meetings." Over one-half (54.6%) of the respondents strongly agreed with this statement after graduation whereas only 38.5% had strongly agreed before graduation. Two negative shifts in attitudes can be noted in Table 9. For the statement "helped me choose an occupation," 26.5% responded negatively before graduation and 40.3% responded negatively after graduation. On a related statement, "helped me understand how to enter and advance in agricultural occupations," 6.4% were negative before graduation and 16.2% were negative after graduation.

In relation to the objective of the studies (Phase I and II) which sought to determine the relationship between attitudes about the value of vocational education in agriculture and occupational status, economic level, further education and demographic factors, each of the 16 statements was examined by factor analysis using the principle components method and varimax rotation. Three factors were identified and labeled: (1) values of program, (2) instructional program, and (3) career guidance.

For the first factor, overall value of the program, four questionnaire items loaded .60 or higher: (1) vo-ag helped me develop leadership skills (.67); (2) vo-ag helped me learn to get along with others (.66); (3) vo-ag classes were good for me (.70); and (4) if I had it to do over again, I would enroll in vocational agriculture (.62). For the second factor, instructional program, three questionnaire items loaded .60 or higher: (1) vo-ag taught me skills useful in agribusiness and natural resources (.72); (2) vo-ag helped me learn to work in production agriculture (.60); and (3) vo-ag helped me learn to work in agribusiness and natural resources areas like forestry, sales and services, and processing (.68). The final factor, career guidance, had three items loading .60 or higher: (1) my teacher encouraged me to enter an occupation in agriculture (.70); (2) my teacher encouraged me to consider attending college (.76); and (3) my teacher provided me information on careers in agriculture (.69). There were seven of the 16 attitudinal items that did not load on any of the three factors.

To determine whether the independent variables (occupational plans, years of enrollment, family residential acreage, school size, adequacy of school facilities, years in FFA, highest FFA degree, SOEP participation, type of SOE, SOE supervision) were related to the attitude factors, a step-wise multiple regression analysis was conducted. The three factors identified by factor analysis were used as dependent variables. A probability level of .05 was used to determine if each independent variable significantly contributed to the explanation of variance in each factor.

Relative to the Phase I data (seniors), the following were found:

For the first factor, values of the program, there were three variables that contributed to the variance: (1) number of years of participation in SOE, (2) adequacy of land laboratory, and (3) teacher availability to supervise SOE programs in the summer. However, these variables accounted for only 13.3% of the variance (R^2) in this factor.

For the second factor, instructional program, there were three variables that significantly explained the variance: (1) teacher availability in the summer, (2) number of years of participation in SOE, and (3) adequacy of land laboratory. These variables explained 11% of the variance (R^2) in this factor.

For the third factor, career guidance, there were again three variables that contributed to the variance: (1) number of years in FFA, (2) adequacy of land laboratory, and (3) number of years of participation in SOE. These variables explained 17.9% of the variance (R^2) in this factor.

In Phase II, eight independent variables were utilized in the step-wise multiple regression analysis in an attempt to explain variance in the attitudinal factors. These included occupational status, economic level, further education, years in FFA, highest FFA degree, marital status, race, and income.

For the first factor, values of the program, one variable contributed to the variance: highest FFA degree achieved. However, this variable accounted for only 9% of the variance (R^2) in this factor.

For the second factor, instructional program and the third factor, career guidance, none of the independent variables significantly contributed to variance.

Employer Satisfaction Studies

A third major component area of evaluation studies outlined in the model in Figure 1 relates to the degree to which employers are satisfied with employees who have received training in and through the program of vocational education in agriculture. Currently researchers are collecting data by a mail questionnaire from employers/supervisors of a sample of the accessible population from the two previously discussed studies on student satisfaction (Arrington and Price, 1983; Arrington, 1984).

Employers are being asked to rate the effectiveness of the program completers' training based on a knowledge of their vocational training and/or their on-the-job performance.

Appropriate comparisons will be made between the employers' perception and program completers' perceptions (Arrington, 1984) on selected items.

Social/Leadership Skill Development and Cost Benefit Effectiveness Studies

Two additional evaluation model components relate to assessment of skills developed by program participants related to social and/or leadership skills and a determination of the costs and benefits/effectiveness of selected programs. Currently, no studies have been conducted in these two component areas. However, studies are being conceptualized and designed for future efforts.

CONCLUSIONS

Based upon a review of the data and subsequent findings of the various evaluation studies cited in this article, the following major conclusions are made relative to the program of vocational education in agriculture in Florida.

1. Student mastery of the competencies identified to be taught in the Fundamentals and Applied Principles programs was approximately 57%. The students had the lowest level of mastery in the area of agricultural mechanics.
2. Students who were members of the related vocational student organization (FFA) and were involved with an SOE program tended to perform better on achievement tests for the Fundamentals and Applied Principles programs. This provides empirical evidence to much rhetoric concerning the practical value of these integral program components for enhancing student achievement.
3. The majority of 1983 vocational agriculture program completers in Florida were involved to some degree in an occupation related to agriculture one year after graduation. When those who continued their education and those who entered the military are added, over 70% of the program completers were accounted for.
4. Program completers tended to not accurately predict their post-high school occupational/educational plans.
5. Overall, program completers have very positive attitudes about their experiences in vocational agriculture.

Attitudes had changed to be even more positive than those expressed prior to graduation.

6. Highest FFA degree earned significantly contributed to the explanation of variance in program completer attitudes about the values of the program.

SUMMARY

In an effort to conceptualize, plan, and conduct research activities to gather data for decision-making concerning program improvement in vocational education in agriculture, a model for evaluating programs was developed by the Department of Agricultural and Extension Education, University of Florida. Through the use of this model, six objectives to guide research activities were identified. Using these objectives and the model, several research studies have been conducted, data analyzed, and reported. The conclusions of these studies assist in providing a more programmatic, systematic, and valid data base for decisions affecting the future of vocational education in agriculture.

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